Health Alert Network
Architectural Standards

Introduction
This document is a supplement to the Centers for Disease Control and Prevention (CDC) Program Announcement Number 99051. These Health Alert Network (HAN) Architectural Standards are governing requirements for the acquisition of information technology assets and services that are acquired using CDC federal funding in support of the goals of the HAN.

If the applicant deems it necessary or more advantageous to deviate from these mandatory architectural standards, the application shall indicate: 1) why a deviation is necessary or advantageous, 2) how the alternative solution will still meet the national compatibility and interoperability requirements outlined below, and 3) how the proposer will ensure sustainability of the alternative solution over the next five years.

The listing of various hardware, software, and communication technologies are not all required for the Health Alert Network. The main functional requirements are listed in the goals section. The various components are listed herein to ensure that investments made in complementary technologies are consistent with the HAN.

Purpose
The HAN Architectural Standards are established to ensure that investments made in information technology supporting HAN functional goals also achieve nationwide connectivity, interoperability, consistency, and minimum performance characteristics.

Investment Goals and Strategies
The primary goals for investments in information technology are to achieve:
- computing and communications capability for all appropriate public health staff; and
- high performance, continuous, reliable, nationwide, secure connectivity.

The primary strategies for IT investments are:
- equipping appropriate public health staff with modern desktop and/or mobile personal computer capacity;
- providing secure E-mail and secure web browsing capability and linking appropriate public health staff to the Internet either directly or through local or wide area networks which in turn are linked to the Internet; and
- employ national and/or industry standards for all products as noted throughout.

Architectural Standards and Performance Characteristics
Personal Computer Technology

Desktop Workstation Platform (minimum configuration for new systems)
Intel compatible 32 bit Pentium II processor operating at 300 MHz, with 64MB RAM, 4GB hard drive, 16X or greater speed CD-ROM drive, 15 inch color monitor with 16 bit color and 800 x 600 resolution, 3.5 inch floppy drive, sound card and speakers. Other platforms (e.g. Apple Macintosh) of equivalent functionality are also acceptable. Equivalent functionality means that the system fully supports the functionality of the web browsers, network connectivity, security, and office automation tools described herein. [note: existing computers should be Pentium class or greater]

Desktop Connectivity:
If the desktop platform is to be connected to a local area network, then an appropriate network connection device is required.

Laptop Platform (minimum configuration for new systems):
Same as desktop, except 32 bit Pentium II processor at 166 MHz including file encryption/security software for sensitive information or data.

Operating System:
32-bit operating system, such as Microsoft Windows 95 or higher, or Apple Macintosh OS 7.5 or higher. For new Intel-based systems, Microsoft Windows NT for workstations version 4.0 (with service pack 4) or greater is recommended when feasible because of the enhanced security capabilities and stability.

Internet Browser:
Browser version must support 128 bit encryption, include Plugins for video and audio streaming, and must support X.509 digital certificates and Java version 1.0.2 or higher. Internet browsers: Microsoft Internet Explorer version 4.01 or greater or Netscape Communicator version 4.07 or greater (both are currently downloadable for no cost from the manufacturers; Microsoft: http://www.microsoft.com and Netscape: http://www.netscape.com.

Data Management:
Any ANSI SQL and ODBC compliant database management system and/or EpiInfo version 6.04b which is currently available from CDC at no cost at: http://www.cdc.gov/epo/pub_sw.htm.

Office Automation:
Word processing software capable of importing and exporting files into HTML, RTF, and ASCII and spreadsheet software capable of importing and exporting files into Data Interchange Format (DIF).

E-mail systems shall be able to send, receive and decode SMTP messages and binary attachments.

Local and/or Wide Area Networking:
Local area networks (LANs) and LAN connectivity to a regional or State wide area network (WAN) should be employed wherever appropriate to maximize HAN connectivity coverage of local public health staff. The networks will need adequate monitoring to assure continuous connectivity. Disaster recover plans should be in place to allow quick recovery should any components fail. The LANs shall meet the characteristics below:

Protocol: Capable of routing TCP/IP traffic.
Performance: 10Mbps or greater

Network and Desktop User Support:

There must be explicit arrangements for adequate network and desktop user support. Support arrangements include ability of users to obtain answersto hardware and software operational questions, repair of equipment, installation of new equipment and software, administration of servers where appropriate, and other general technical support. Critical operational support functions require a <24 hour response capability. Typical industry technical support ratios are one full time technical support staff or network administrator for each 50-100 workstations covered.

Servers
Servers may be appropriate for local and/or State health departments for LAN file, print, and E-mail services, the hosting of bioterrorism information and data, list-servers for broadcasting information, and FTP servers for file transfers. Other servers may be appropriate in certain circumstances including web servers, video conferencing servers, streaming video servers, SQL database servers, etc. Servers shall be equipped with appropriate uninterruptible power supply (UPS) systems.

Web servers shall support HTML, HTTP, HTTPS, CGI, and Java servlet APIs. Critical servers supporting over 200 workstations must have a backup or alternate server.

Internet Connectivity
The primary performance characteristics of Internet connectivity is that the connection(s) to the Internet are online, all the time, wherever technically feasible, in other words do not require manual dial-up each time to be connected to the Internet. The connection shall also be of sufficient capacity and speed to enable large file transfers rapidly as well as interactive collaboration and multimedia distance-based training.

Protocol:
TCP/IP

Bandwidth:
Minimum 56 Kbps for the first 20 workstations and additional bandwidth as needed sufficient to insure effective delivery of video streaming to desktop workstations.

Connectivity Technologies
Any method of connecting is acceptable as long as the other architectural standards are met. Technology options may include leased digital lines, ISDN lines, cable modem, digital subscriber link (DSL) or variants thereof such as ADSL, wireless connectivity including satellite, etc. Appropriate hardware, software, as well as telecommunication services may be acquired with these funds.

Security
To ensure secure communications via electronic mail and web server access, investments must support a Public Key Infrastructure (PKI). Web servers must support the use of X.509 digital certificates for authentication, secure sockets layer (SSL) and E-mail systems must support S/MIME. All personnel with authorization for secure communications will authenticate theiridentity with x.509 digital certificates.

The State/local LAN or WAN should have intruder detection, virus scanning, authentication of users, security policies/auditing, and firewall(s) to the Internet as needed. The firewall shall be IpSec compliant. Local health departments with any Internet server must have a separate firewall system.

Redundancy

Due to the critical nature of the HAN and the need for 24 hour/7 day a week availability, design considerations should include redundancy where appropriate. At a minimum, health agencies that have a single Internet connection should have a back-up capability such as at least one desktop workstation that has dial-up 56 kbps Internet connectivity to an alternate Internet service provider (ISP). CDC is considering providing direct dial-up capability to CDC Internet servers in the future as a further contingency.

Year 2000 Compliance
All hardware and software operating on the network should be certified Y2K compliant.

Access Policy
The receiving agency shall have policies and procedures in place that enable use of the information technologies in support of HAN including access to the Internet.

Scanner (for laboratories)
Flatbed 600 dpi color scanner with SCSI interface to workstation, 24 bit color processing, 8 bit grayscale levels, and image editor software capable of exporting images in JPEG format.

Video camera (for laboratories)
Video camera above general purpose level for bidirectional consultation on laboratory tests such as biochemicals or cultures.